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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.            | CONFIRMATION NO.       |
|--|-------------|----------------------|--------------------------------|------------------------|
| 10/673,779   | 09/29/2003  | Shuhei Yamada        | 011.2-11335-US01               | 2487                   |
| 490 7590 06/12/2007<br>VIDAS, ARRETT & STEINKRAUS, P.A.<br>6109 BLUE CIRCLE DRIVE<br>SUITE 2000<br>MINNETONKA, MN 55343-9185 |             |                      | EXAMINER<br>GOUDREAU, GEORGE A |                        |
|  |             |                      | ART UNIT<br>1763               | PAPER NUMBER           |
|  |             |                      | MAIL DATE<br>06/12/2007        | DELIVERY MODE<br>PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                       |                                      |       |
|------------------------------|---------------------------------------|--------------------------------------|-------|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/673,779  | <b>Applicant(s)</b><br>YAMADA ET AL. |       |
|                              | <b>Examiner</b><br>George A. Goudreau | <b>Art Unit</b><br>1763              | _____ |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 March 2007.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 7-11 and 18-28 is/are pending in the application.
- 4a) Of the above claim(s) 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-10 and 18-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

*George A. Goudreau*  
**GEORGE GOUDREAU**  
**PRIMARY EXAMINER**  
 6-071

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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1. This action will not be made final due to the new grounds of rejection.
2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-5, 7-10, and 18-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et. al. (JP 2001-118,815) further in view of Inoue et. al. (2001/003672).

Tanaka et. al. disclose a process for cmp polishing a wafer with a cmp slurry, which is comprised of colloidal silica particles, a strong base (i.e.-tetra methyl ammonium hydroxide, etc.), a weak acid, and H<sub>2</sub>O. The colloidal silica particles have a primary particle diameter of (8-50) nms., and a secondary particle diameter of

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(12-200) nms. This is discussed specifically in the abstract; and discussed in general on pages 1-8. Tanaka et. al. fail, however, to specifically disclose the following aspects of applicant's claimed invention:

- the specific cmp polishing process parameters, which are claimed by the applicant;
- the specific usage of anhydrous piperazine or piperazine hexahydrate as the strong base in the cmp slurry, which is taught above;
- the specific usage of a cmp slurry which contains hydroxyl ethyl cellulose (i.e.-a water soluble polymer); and
- the specific conduction of applicant's claimed cmp polishing process

Inoue et. al. teach that it is desirable to use hydroxyl ethyl cellulose in a cmp slurry which contains colloidal silica particles which are used in the cmp polishing of a wafer in order to prevent dust particles from adhering to the wafer which is cmp polished. This is discussed specifically on pages 4-6; and discussed in general on pages 1-7.

It would have been obvious to one skilled in the art to employ any of anhydrous piperazine or piperazine hexahydrate as the strong base in the cmp slurry, which is taught above based upon the following. The usage of these compounds as strong bases is conventional or at least well known. (The examiner takes official notice in this regard.) Further, this simply represents the usage of an alternative, and at least equivalent means for supplying a strong base in the cmp slurry, which is taught above

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to the specific means, which are taught above. Also, Tanaka et. al. disclose the usage of piperazine in a cmp slurry.

It would have been obvious to one skilled in the art to use the hydroxyl ethyl cellulose additive of Inoue et. al. in the cmp slurry which is taught by Tanaka et. al. in order to prevent dust particles from adhering to the surface of the wafer during the cmp polishing process based upon the following. Inoue et. al. teach that it is desirable to do such in order to prevent dust particles from adhering to the surface of a wafer to be cmp polished.

It would have been prima facie obvious to employ any of a variety of different cmp polishing process parameters in the cmp polishing process taught above. These are all well-known variables in the cmp polishing art, which are known to affect both the rate and the quality of the cmp polishing process. Further, the selection of particular values for these variables would not necessitate any undue experimentation, which would have been indicative of unexpected results.

Alternatively, it would have been obvious to one skilled in the art to employ the specific process parameters which are claimed by the applicant in the cmp polishing process taught above based upon *In re Aller* as cited below.

Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. ≡ In re Aller, 220 F. 2d 454, 105 USPQ 233, 235 (CCPA).

Further, all of the specific process parameters which are claimed by the applicant are results affective variables whose values are known to affect both the rate, and the quality of the cmp polishing process.

As to applicant's recitation of the conduction of a specific cmp polishing process in their cmp slurry composition claims, the examiner cites the case law listed below of interest to the applicant.

Furthermore, it is obvious to one skilled in the art that the configuration of the substrate worked upon by the apparatus claimed in this invention is not patentable in view of In re Young (25 U.S.P.Q. 69, 71 (CCPA 1935)) and In re Rishoi (94 U.S.P.Q. 71,73 (CCPA 1952)). The Court of Customs and Patent Appeals stated in In re Young that inclusion of material worked upon by a machine as element in claim may not lend patentability since claim is not otherwise allowable. Similarly, the Court of Customs and Patent Appeals stated in In re Rishoi that there is no patentable combination between a device and the material upon which it works.

Thus, it is irrelevant whether the prior art specifically discloses the usage of a cmp slurry to conduct the cmp polishing process, which is recited in applicant's cmp polishing composition claims since the cmp slurry, which is disclosed in the prior art, is inherently capable of conducting applicants claimed cmp polishing process. Thus, all of applicant's claimed limitations are fully met in this regard.

5. Applicant's arguments filed 3-13-07' have been fully considered but they are not persuasive.

Applicant argues the following points regarding the examiner's rejection of their claimed subject matter.

-The Inoue et. al. reference is not combinable with the Tanaka et. al. reference since the two patents are directed toward different methods for cmp polishing which would have exhibited different processing needs from each other. (See applicant's declaration.) Further, applicant has discovered unexpected results with the usage of their claimed cmp slurry based upon the reduction in the amount of haze, which is left on the surface of the wafer after the cmp polishing

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process. This reduction in haze is associated with the specific usage of applicant's claimed colloidal silica particles as the abrasive material in the cmp slurry.; and

-The prior art fails to disclose applicant's claimed cmp polishing process.

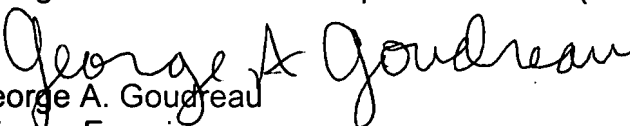
The examiner must disagree.

-The teachings of the Inoue et. al. reference are now combinable with those of the Tanaka et. al. reference in the current rejection of applicant's claims using these references. (This addresses applicant's declaration.); and

-It is irrelevant the prior art of record does not disclose a cmp slurry, which is used to conduct applicant's claimed cmp process since the cmp slurry, which is taught above, is fully capable of conducting applicant's claimed process. Thus, all of applicant's claimed process limitations in their cmp composition claims are fully met.

6. Any inquiry concerning this communication should be directed to examiner

George A. Goudreau at telephone number (571)-272-1434.

  
George A. Goudreau  
Primary Examiner  
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